



BU1

Powered Subwoofer

Technical Manual



INFINITY SYSTEMS INC.
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Woodbury, New York 11797

H A Harman International Company

Part No.: 1112-BU1 11/98

THIS MANUAL IS FOR THE BU1 REVISION WITHOUT AN EXTERNAL POWER SWITCH

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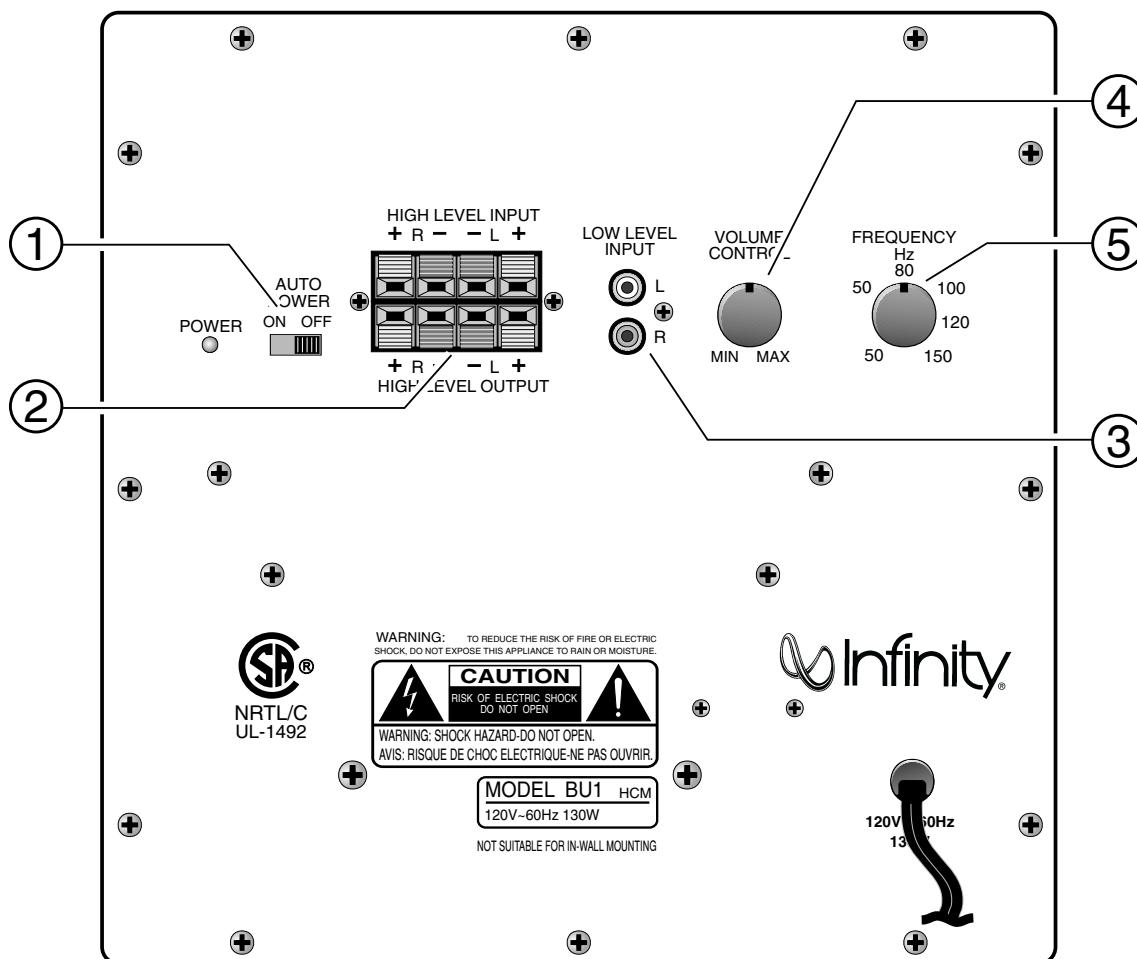
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BU1 SPECIFICATIONS

Driver	8" Woofer
Nominal Impedance	4
Enclosure Design.	Tuned Port
Amplifier Power	50 watts RMS
Frequency Response	45Hz - 150Hz (\pm 3dB)
Crossover Frequency	50 to 150 Hz Continuously Variable
Inputs	
Line Level	RCA jacks
High Level	(Speaker) Input terminals
Outputs.	
	Full range Speaker
Sensitivity	
Low Level	50mV
High level	1V
Input Impedance	
Low Level	10k
High level	4.7k
Dimensions	
Inches	11 $\frac{1}{2}$ x 11 $\frac{1}{2}$ x 11 $\frac{1}{2}$ "
Metric	29.2 x 29.2 x 29.2cm plus 1 $\frac{1}{4}$ " (32mm) for feet

Occasional refinements may be made to existing products without notice, but will always meet or exceed original specifications unless otherwise stated.

BU1 CONTROLS AND THEIR FUNCTION



1. Auto Power - This Auto On/Off switch controls whether the BU1's Automatic turn-on circuit is active. When the switch is ON, the BU1 will turn itself on, indicated by a green LED, when it is plugged in and receiving a signal. When the BU1 has not received a signal for approximately ten minutes, the unit will revert to the STANDBY mode, indicated by a red LED. When this switch is OFF, the unit will revert to the STANDBY mode and will stay OFF, regardless of input signal. **THIS IS NOT A TRUE AC POWER SWITCH AS IT DOES NOT DISCONNECT THE AMPLIFIER FROM THE 120VAC LINE.**

2. High Level Inputs - These High Level Inputs are for receivers that do not have line-level "pre-amp out" or "subwoofer out" jacks. When a pair of main or satellite speakers are attached to the OUTPUT terminals, they are driven the full range of frequencies as generated by the music source (receiver, amplifier, etc.)

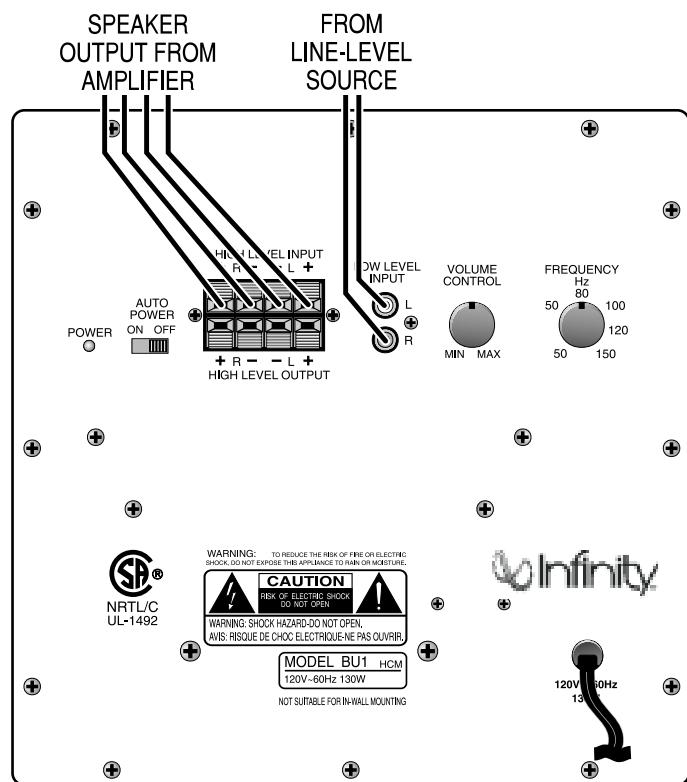
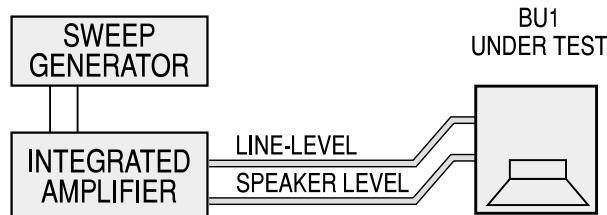
3. Low Level Input - These left and right Line Level Inputs are normally used when the receiver/processor has line-level "pre-amp out" or "subwoofer out" jacks. If a single cable mono or subwoofer source is connected to the BU1, a Y-cable must be connected to the subwoofer for full output.

4. Volume Control - This controls the volume level of the subwoofer.

5. Frequency - The Frequency adjustment determines the upper corner roll-off point for the BU1.

EQUIPMENT

Function generator/signal generator/sweep generator
 Integrated Amplifier
 Multimeter
 Cables - line level (RCA) and speaker cables



TEST PROCEDURE

Equipment needed:

- Function/signal generator/sweep generator
- Integrated Amplifier
- Multimeter
- Cables - line level (RCA) and speaker cables

General Function

UUT = Unit Under Test

1. Connect both right and left line level inputs (RCA) to signal generator and UUT. Use Y-cable if necessary from mono source. VOLUME control should be full counterclockwise.
2. Turn on generator, adjust to 25mV, 50 Hz.
3. Plug in UUT; red LED should be ON. Turn VOLUME control full clockwise.
4. LED should turn Green; immediate bass response should be heard and felt from port tube opening.
5. Turn off generator, turn VOLUME control fully counterclockwise, disconnect RCA cables.
6. Connect one pair of speaker cables to either high level input terminal on UUT. Cables should be connected to an integrated amplifier fed by the signal generator.

7. Turn on generator and adjust so that speaker level output is 1.0V, 50 Hz. Turn VOLUME control full clockwise.

8. Green LED should light, immediate bass response should be heard and felt from port tube opening.

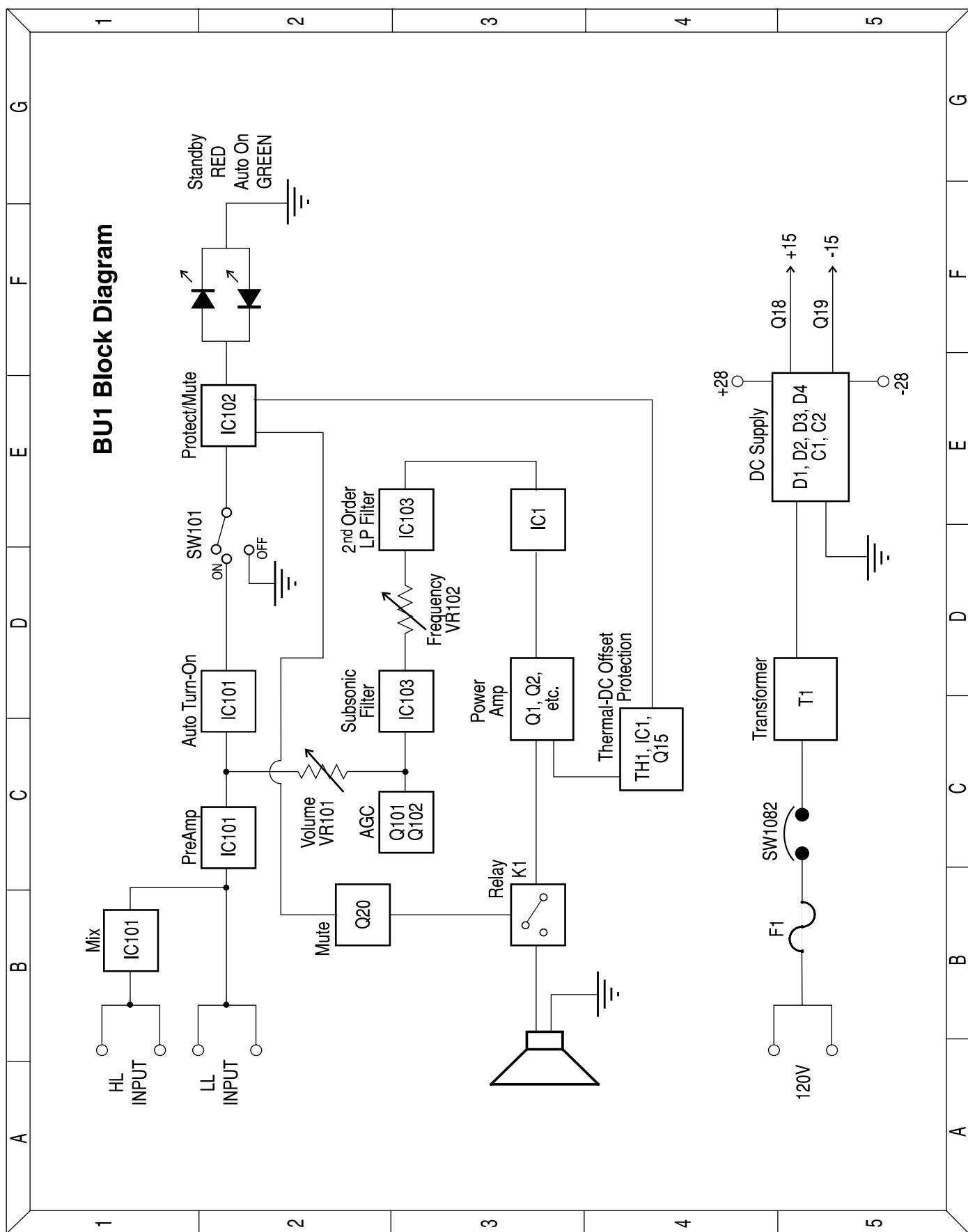
Sweep Function

1. Follow steps 1 - 4 above, using a sweep generator as a signal source.
2. Sweep generator from 20Hz to 300Hz. Listen to the cabinet and drivers for any rattles, clicks, buzzes or any other noises. If any unusual noises are heard, remove driver and test.

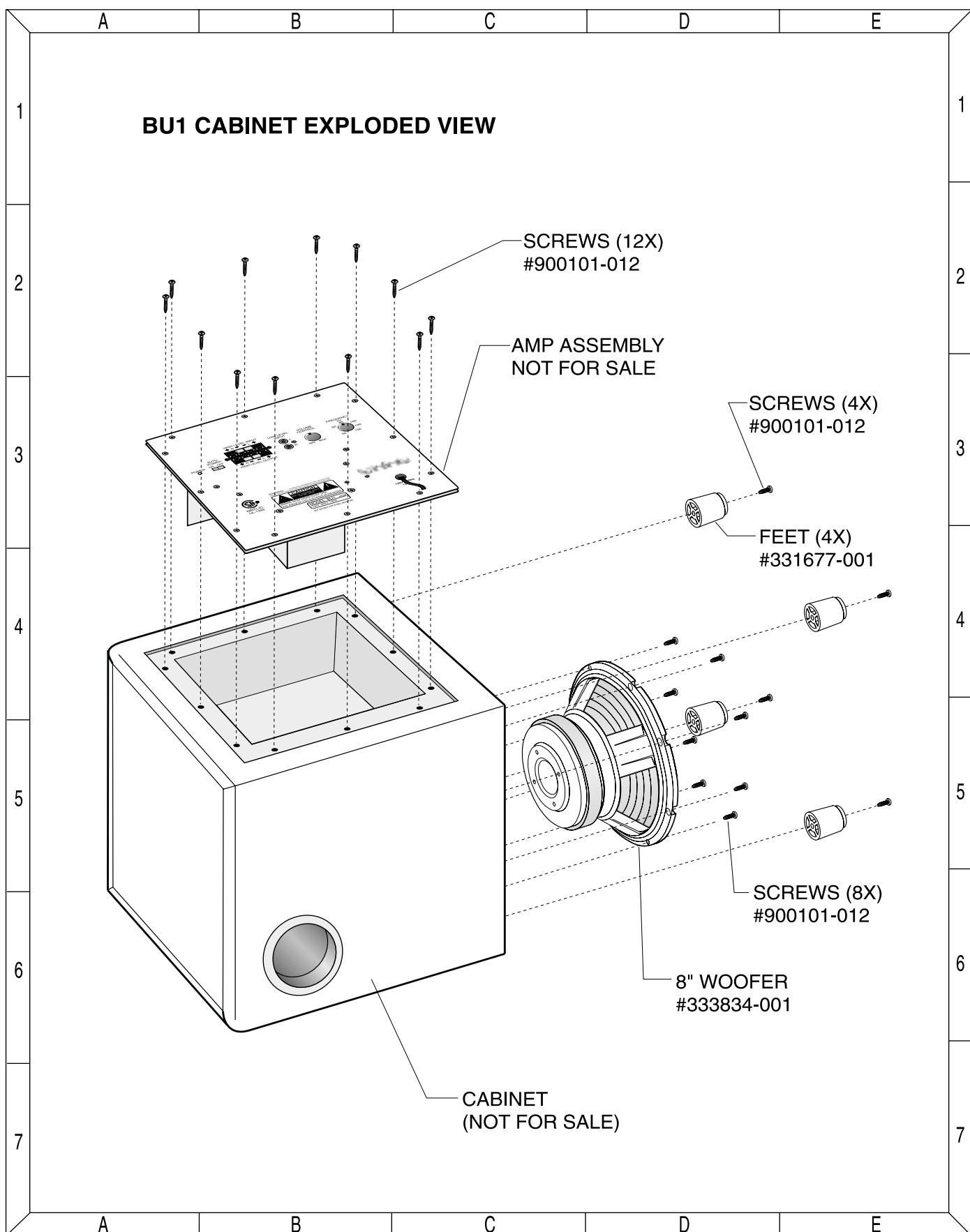
Driver Function

1. Remove driver from cabinet; detach + and - wire clips.
2. Check DC resistance of driver; it should be 3.3 ohms.
3. Connect a pair of speaker cables to driver terminals. Cables should be connected to an integrated amplifier fed by a signal generator. Turn on generator and adjust so that speaker level output is 5.0V.
4. Sweep generator from 20Hz to 1kHz. Listen to driver for any rubbing, buzzing, or other unusual noises.

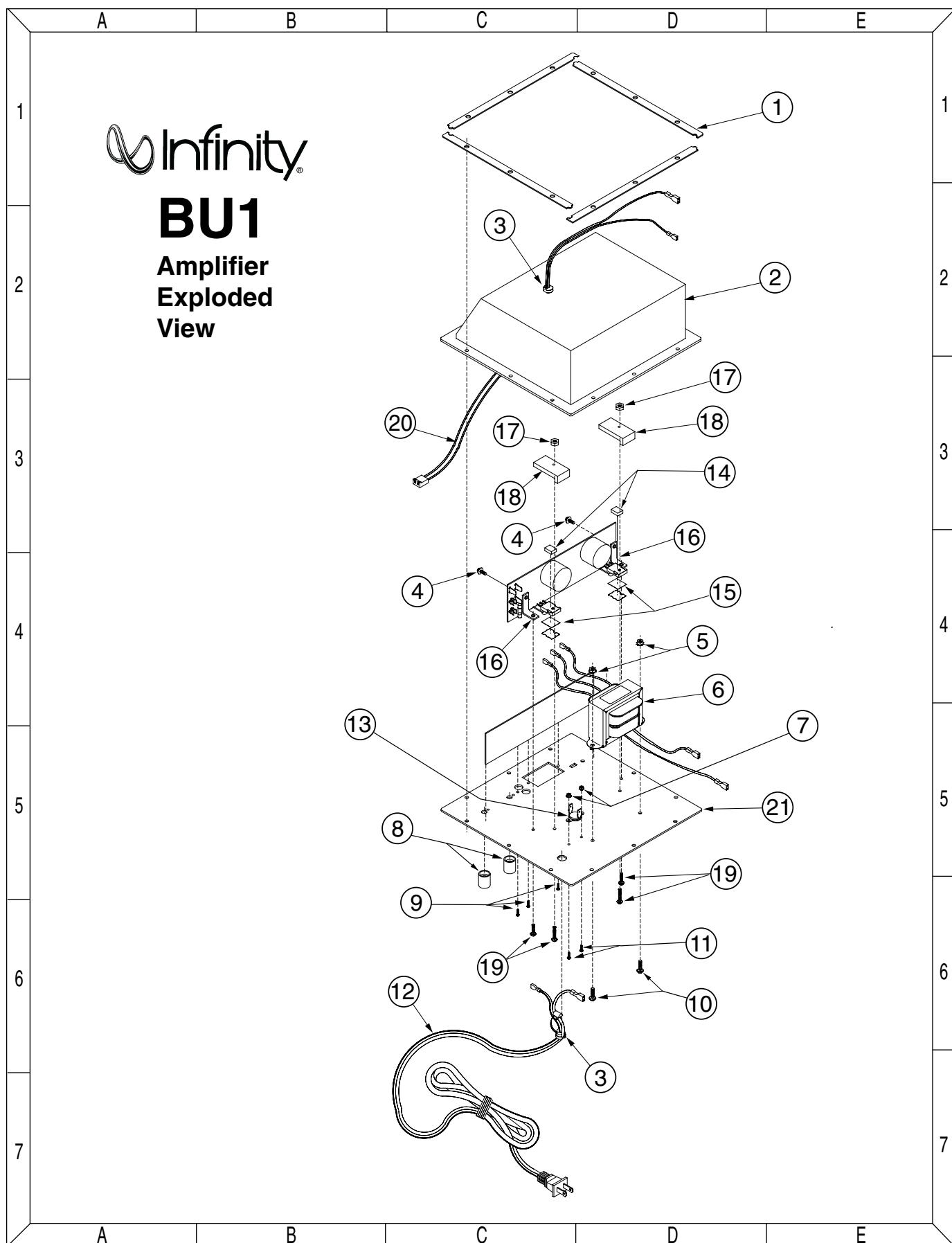
BU1 AMPLIFIER BLOCK DIAGRAM



BU1 CABINET EXPLODED VIEW



AMPLIFIER EXPLODED VIEW



BU1 MECHANICAL PARTS LISTS

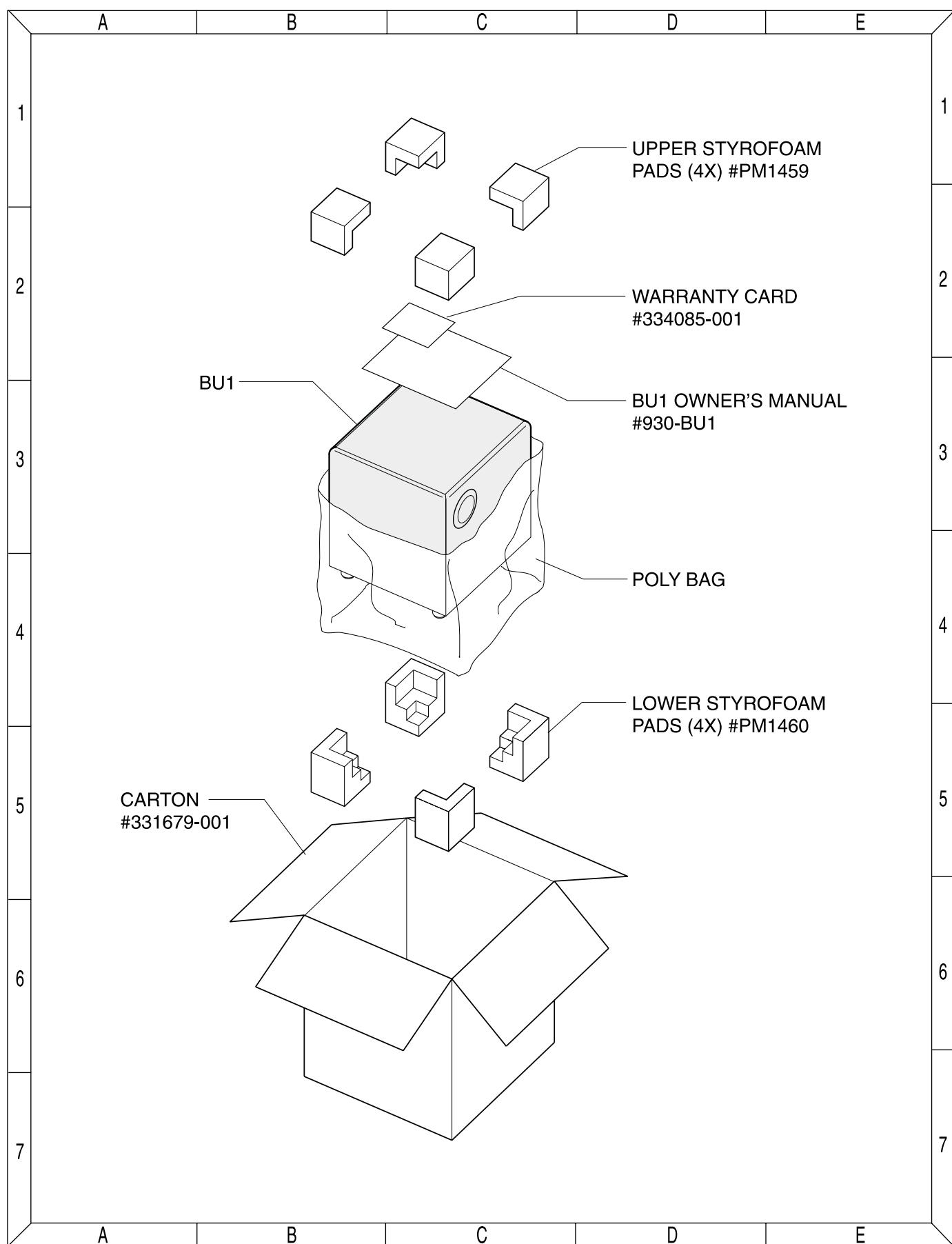
Ref. #	Part #	Description	Qty.	Ref. #	Part #	Description	Qty.
1	XX1342	GASKET 1 OF 4	4	15	SP1073	Sil Pad TO-220 0.750" x 0.500"	2
2	XX1275	Plastic Cover For Inf. Bu-1(2)	1	16	BR1395	Bracket Pwr Support	2
3	XX1250	Strain Relief SPT-1 Black	2	17	NU1057	Hex Nut Keps 6-32 Zinc Fsh (BRACKET SUPPORT)	2
4	SC1194	Screw 6-32x3/8 Tapt-Thr Hex Washr	2	18	BR1566	FIN-XTOR BAR TO-218 USED ON BU1	2
5	NU1049	Nut 8-32 x 1/4 Hex Keps Sink F (XFORMER)	2	19	SC1285	SC 6-32 x 3/4" MACH-THR PAN PHI HEAD BLACK ZINC FSH (XTOR BAR TO218[2X], BRACKET SUPPORT[2X])	4
6	MI1210	POWER TRANSFORMER BU-1	1				
7	NU1059	Nut 4-40Keps-Thr,Hexag. Znk Fs (THERMOSWITCH)	2	20	HA1218	SPK HARNESS AWG 18 MOLEX TO FASTON .187 AND .250 (PLASTIC COVER)	1
8	XX1343	KNOB BLACK	2	21	BR1537	FRONT PLATE BU-1	1
9	SC1215	Screw M3x1.25x10 Plas-Thr Pan-Phi (SPK CONNECTOR, RCA CONNECTOR)	3		XX1369	GASKET PWR XMER 4.20" x 1.45" x 1/16" (FRONT PLATE)	1
10	SC1214	Screw 8-32x1/2 Mach-Thr Pan-Phil (XFORMER)	2			NOT SHOWN	
11	SC1253	Screw 4-40x3/8 Pan Phillips Hd Mc (THERMOSWITCH)	2				
12	HA1132	HARNESS AC CORD BU-1/BU-2 (FRONT PLATE)	1				
13	SW1082	THERMOSWITCH 60 DEG C PANEL MOUNTED FASTON TERM (FRONT PLATE)	1				
14	SP1082	SPONGE W/ADHESIVE L=1/4" W=1/4" T=3/16" (BIAS XTOR, THERMISTOR)	2				

BU1 ELECTRICAL PARTS LISTS

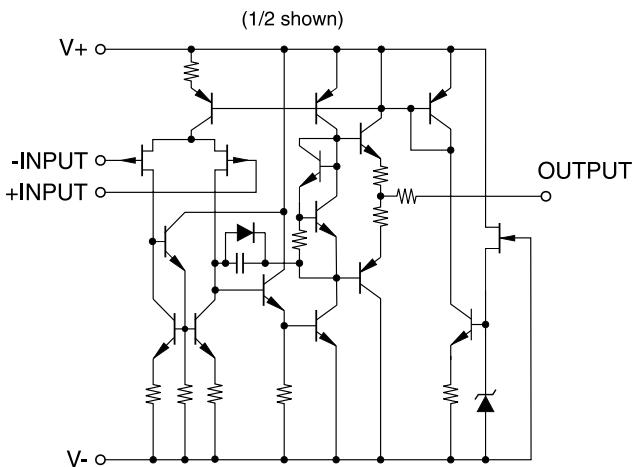
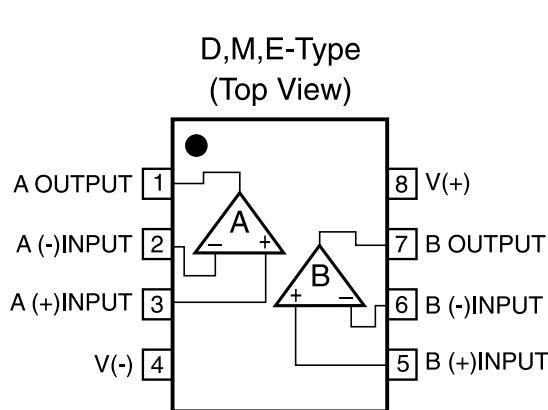
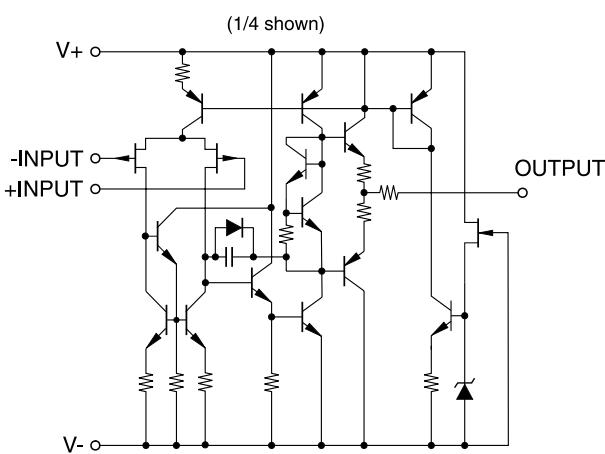
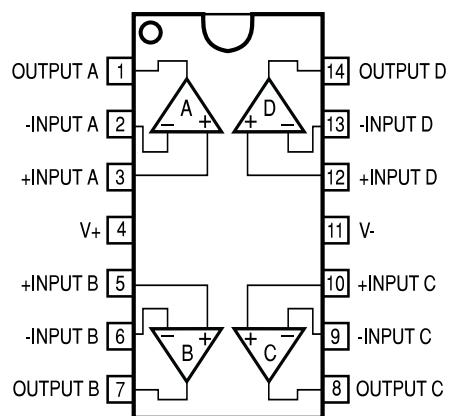
Ref.#	Part #	Description	Qty.	Ref.#	Part #	Description	Qty.				
Capacitors											
C1, 2	CP1545	CAP ALUM ELECT 4700uF 20% 50V SNAP-IN 30x25mm	2	IC1, 102, 103	IC1041	IC SMD DUAL J-FET-INPUT OP AMP T/R TL072	3				
C3, 4, 5, 11	CP1552	SMD Cap .1uF 20% 100v Z5U 1210	4	IC101	IC1162	IC SMD Quad-J Fet Input OP Amp TL074	1				
C6, 7, 15, 16, 21, 22, 25, 110, 111, 115, 116, 117, 126, 127	CP1426	SMD CAP 0.1uF 20% 50V Z5U 1206 T/R	14	Integrated Circuits							
C8, 9, 12	CP1475	SMD Cap 33pF 5% 50v NPO 1206	3	J1, 2, 3, 4, 5, 6, 7, 101, 102, 103, 104, 105, 106, 107, 108, 109	RS1779	SMD RES ZERO ohm 5% 1/8W 1206	16				
C10, 23, 24, 133	CP1496	SMD CAP 100pF 10% 50V X7R 1206	4	R1, 2	RS2310	RES CER 0.1 ohm 5% 3W RADIAL BULK	2				
C13	CP1412	Cap Alum El. 47uF 20% 16v Rad.	1	R3, 4	RS1916	RES C/F 5.1 ohm 5% 1/4W T/R	2				
C14	CP1528	SMD CAP 0.1uF 10% 50V X7R 1206 T/R 1	1	R5	RS1994	RES C/F 100 ohms 5% 1/4W T/R	1				
C18, 19, 27, 28, 32	CP1645	Cap Al El 22uF 20% 63V 85 Deg	5	R6, 20, 21, 34	RS1831	SMD RES 7.5Kohm 5% 1/8W 1206	4				
C26	CP1562	Cap Alum El. 330uF 20% 16v T/R	1	R7	RS1871	SMD RES 5.1Kohm 5% 1/8W 1206	1				
C29	CP1808	Cap Poly Fil 0.01uF Class X2	1	R8	RS1878	SMD RES 10 ohm 5% 1/8W 1206	1				
C30, 31	CP1844	SMD CAP CERAMIC 0.01uF 10% 200V X7R 1206 T/R	2	R9, 10, 26, 35, 40, 43, 44, 54, 109, 110, 111, 113, 121, 123	RS1701	SMD RES 10Kohm 5% 1/8W 1206	14				
C101, 102, 103, 104, 113	CP1415	Cap Alum El. 2.2 uF 20% 50v T/R	5	R11, 12, 15, 17	RS1717	SMD RES 100 ohm 5% 1/8W 1206	4				
C107, 119, 120	CP1424	Cap. Alum El. 10uF 20% 16V T/R	3	R13, 14, 32, 57	RS1722	SMD RES 470 ohm 5% 1/8W 1206	4				
C108, 109, 118	CP1646	SMD Cap 220pF 5% 50V X7R 1206	3	R16, 23, 41	RS1706	SMD RES 47Kohm 5% 1/8W 1206	3				
C112	CP1417	Cap Alum El. 22uF 20% 16v T/R	1	R18, 39, 119	RS1703	SMD RES 2.2Kohm 5% 1/8W 1206	3				
C114	CP1411	Cap Alum El. 100uF 20% 16v T/R	1	R19, 22	RS1725	SMD RES 15Kohm 5% 1/8W 1206	2				
C121, 122	CP1539	Cap. Poly Fil .047uF 5% 63V TR	2	R24, 126, 134, 136	RS1700	SMD RES 1Kohm 5% 1/8W 1206	4				
C124	CP1679	Cap. Poly Fil .068uF 5% 63V	1	R25, 118	RS1710	SMD RES 3.3Kohm 5% 1/8W 1206	2				
C125	CP1632	Cap.Poly.Film0.033uF,5%, 63VT/R	1	R27, 28, 29	RS1898	SMD RES 10Kohm 1% 1/8W 1206	3				
Diodes											
D1, 2, 3, 4	DI1005	Rectifier Diode 3A/200V 1N5401	4	R30	RS2160	SMD RES 11Kohm 1% 1/8W 1206	1				
D5, 6, 7, 8, 9, 15, 16, 17, 18, 101, 102, 103, 104	DI1132	SMD Diode Swch LL-34 Pkg T/R RLS4148	13	R31, 124, 138	RS1767	SMD RES 1Mohm 5% 1/8W 1206	3				
D14	DI1010	Diode Fast Rect. 1A/100v Axial	1	R33	RS1877	SMD RES 4.3Kohm 5% 1/8W 1206	1				
Z101, 102	DI1127	SMD Zener 5.6v 5% CP Pkg. T/R	2	R36, 37	RS2424	RES M/O F/P 220 ohm 5% 1W T/R	2				
Z1, 2	DI1150	SMD Zener 15v 5% CP Pkg. T/R	2	R38, 55, 58, 101, 106, 107, 108, 139	RS1705	SMD RES 4.7Kohm 5% 1/8W 1206	8				
				R42, 102, 103, 104, 105, 116, 122, 128, 137, 142	RS1702	SMD RES 100Kohm 5% 1/8W 1206	10				

Ref.#	Part #	Description	Qty.	Ref.#	Part #	Description	Qty.
R51, 52	RS1715	SMD RES 5.6Kohm 5% 1/8W 1206	2	Miscellaneous			
R56	RS1005	RES C/F 100 ohms 5% 1/2W T/R	1	CONN101	C01334	JACK SPEAKER OCTAL PC MOUNT RIGHT ANGLE	1
R112	RS1872	SMD RES 51Kohm 5% 1/8W 1206	1	F1	FS1086	FUSE SLO-BLO 1A 250V 5x20 3AG	1
R114	RS1793	SMD RES 470Kohm 5% 1/8W 1206	1	FUSE1	XX1297	Fuse Clip 5x20 PC Mount	2
R117	RS1968	SMD RES 2.2Mohm 5% 1/8W 1206	1	HARNESS	HA1186	HARNESS 7-POSITION 0.1" CENTER-CENTER L=4" (Connects Power Board to PreAmp/Cross-Over Board)	1
R120	RS1892	SMD RES 10Mohm 5% 1/8W 1206	1	K1	RE1026	RELAY PC MOUNT 24V @ 6A	1
R125	RS1883	SMD RES 1.5Kohm 5% 1/8W 1206	1	L1	MI1100	Inductor Air Core 0.38uH	1
R132, 133, 140	RS1704	SMD RES 22Kohm 5% 1/8W 1206	3	LED101	LE1032	Led Bicolor Red/Green 5mm	1
R135	RS1712	SMD RES 43Kohm 5% 1/8W 1206	1	PCB'S (BLANK)	CL1232	BLANK PCB's WITH CONNECTOR	1
R141	RS1791	SMD RES 39Kohm 5% 1/8W 1206	1	RCA102	C01407	CONNECTOR RCA DUAL VERT. PC MOUNT WHT/RED R/A GOLD	1
Transistors				SW101	SW1084	SWITCH SLIDE DPDT R/A PC MOUNT	1
Q1	TR1346	TIP35C	1	SPKOUT	C01343	Strght Sq Hdr 0.156"Center	1
Q2	TR1347	TIP34C	1	T1	MI1210	POWER TRANSFORMER BU1	1
Q3	TR1183	TIP31C	1	TH1	TH1006	NTC THERMISTOR 10Kohm @ 25DegC	1
Q4	TR1184	TIP32C	1	VR101	RS2426	POT 20K DUAL 16mm B-TAPER VOLUME	1
Q5, 18	TR1043	MPS2222A	2	VR102	RS1794	POT 50Kohm 20% LOG TAPER 15A FREQUENCY	1
Q6, 9, 15, 20	TR1166	2N5401	4				
Q7, 8	TR1167	2N5551	2				
Q10, 12, 16	TR1131	DTC114TK	3				
Q11	TR1108	2SC2412K	1				
Q17, 101, 102	TR1125	2SZ1037K	3				
Q19	TR1010	2N2907A	1				

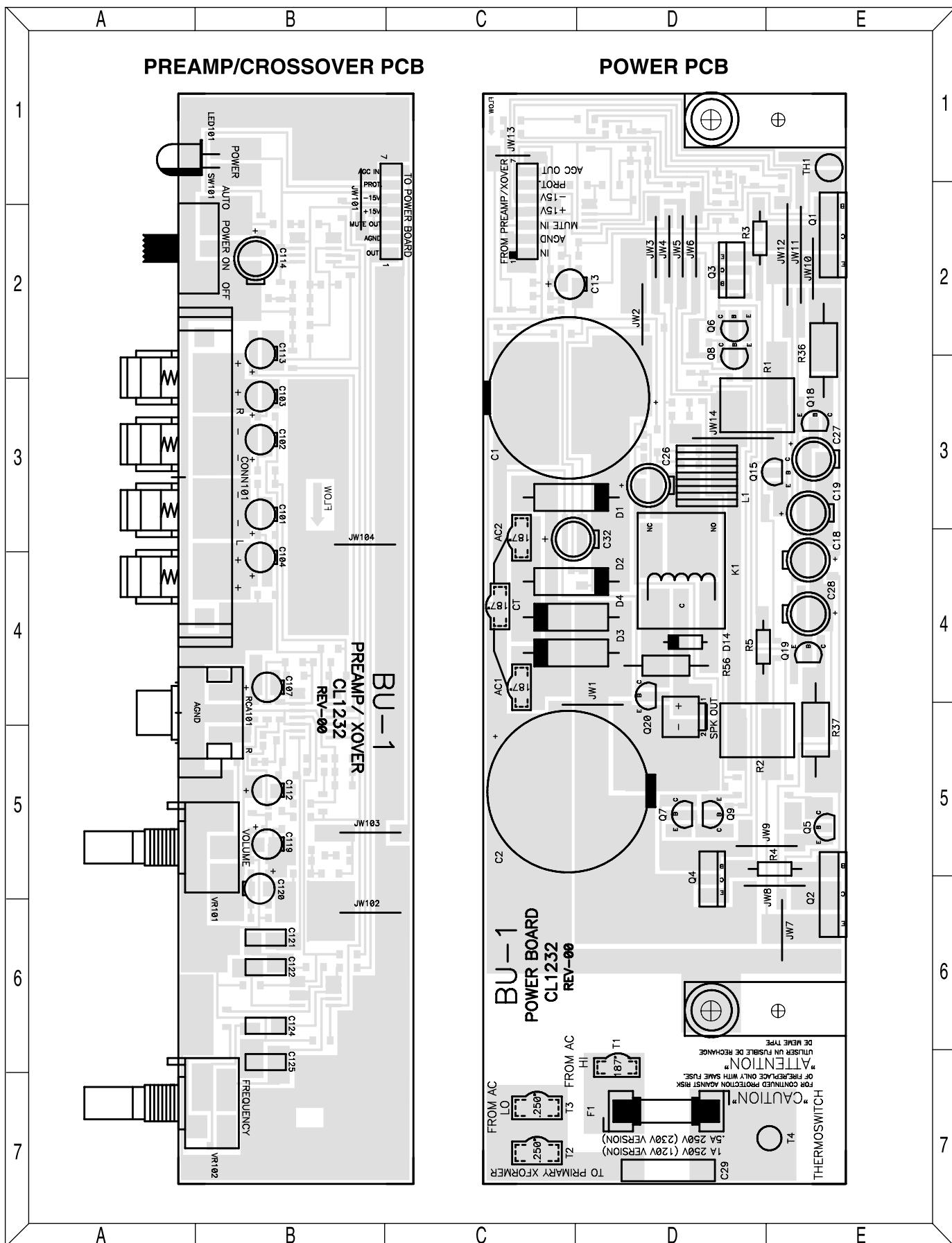
BU1 PACKAGING EXPLODED VIEW



INTEGRATED CIRCUIT DIAGRAMS

IC1, 102, 103 - TLO72, Dual J-FET Input Op-Amp**IC101 - TLO74, Quad J-FET Input Op-Amp**

PRINTED CIRCUIT BOARDS (TOP VIEW, component side)

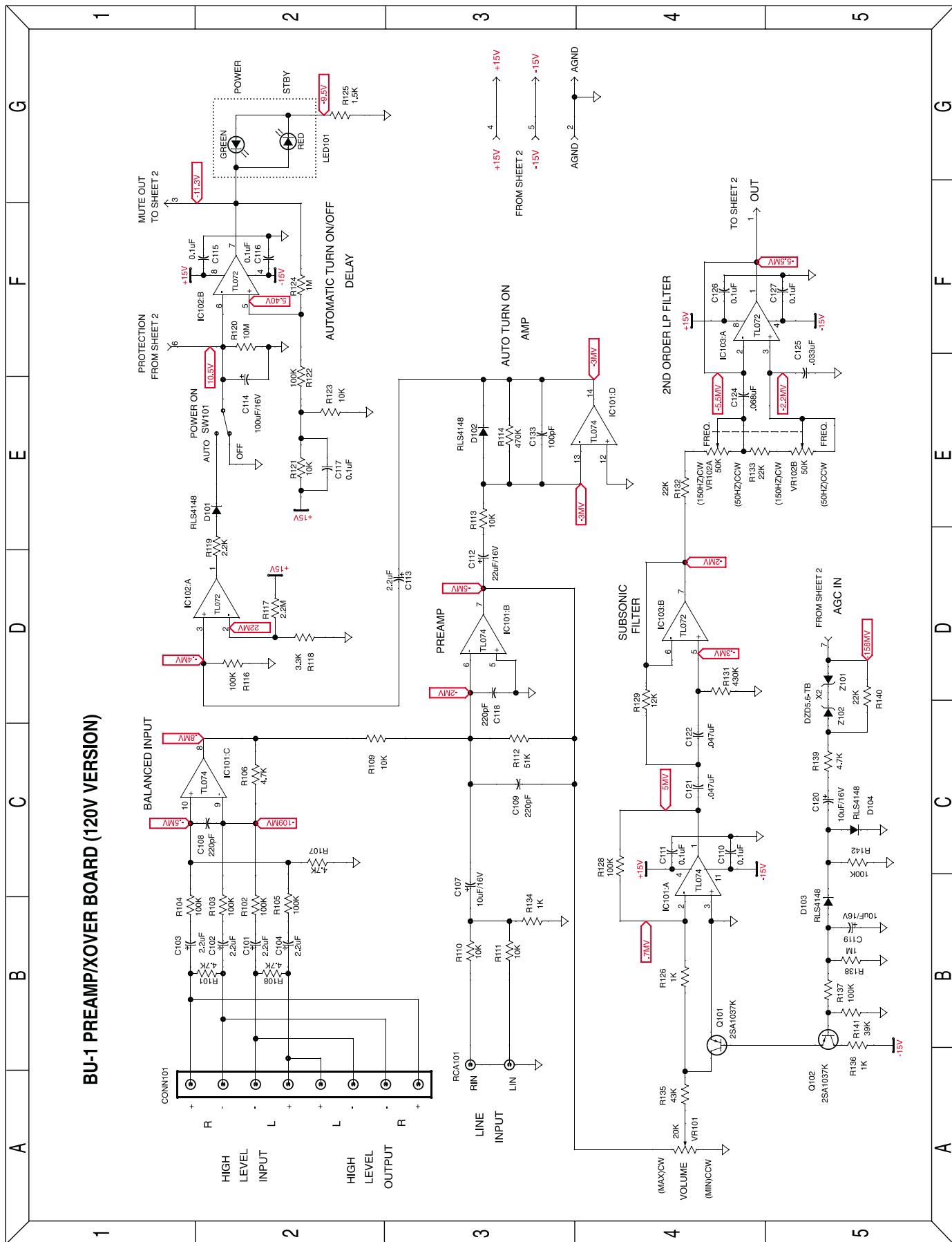


PRINTED CIRCUIT BOARDS (BOTTOM VIEW, solder side)



PREAMP/CROSSOVER SCHEMATIC 120V VERSION

BU-1 PREAMP/CROSSOVER BOARD (120V VERSION)



POWER SCHEMATIC 120V VERSION

